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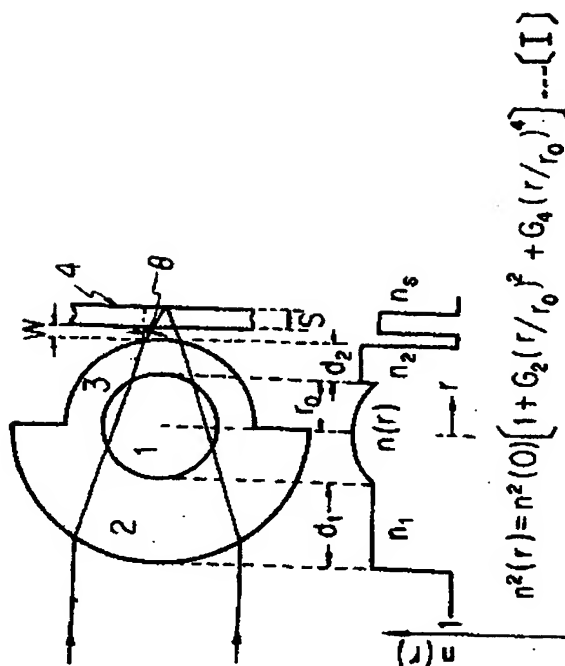
APPLICATION DATE : 04-09-80
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APPLICANT : AGENCY OF IND SCIENCE & TECHNOLOGY;

INVENTOR : SAKURAI KENJIRO;

INT. CL. : G02B 3/00

TITLE : HETEROGENOUS REFRACTIVE INDEX LENS



ABSTRACT : PURPOSE: To make a lens small-sized and to realize an increase of a free working distance, by providing clads whose refractive index and film thickness, etc. are different from each other, in 2 circumferences on an optical path of a heterogenous refractive index sphere.

CONSTITUTION: A refractive index distribution of a lens core 1 is made, for instance, $n^2(r)$ shown in the equation (I). In this case, r_0 , $n(0)$, and G_2 and G_4 are the core radius, the center refractive index, and quadratic and biquadratic factors, respectively. As an execution example in case when refractive indexes of a light source side clad 2 and a disk side clad 3, their thickness, a refractive index of a disk 4 and its thickness, a distance between the core center and the light source, are made n_1 and n_2 , d_1 and d_2 , n_s and S , (a), respectively, and also in case of $b = r_0 + d_2 + W + S/n_s$, that of $n(0) = n_2 = 1.6$, $n_1 = n_s = 1.5$ and $S/r_0 = 0.44$, and a scale factor of $b/a = 0.02$ and $NA = 0.45$ is shown. As for a distribution factor, $-0.07 \geq G_2 \geq -0.2$ and $-0.025 \leq G_4 \leq -0.01$ are selected, respectively.

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